



[4910-13-P]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA-2007-28059; Directorate Identifier 2007-NE-13-AD]

RIN 2120-AA64

Airworthiness Directives; Rolls-Royce plc (RR) Turbofan Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Supplemental notice of proposed rulemaking (NPRM); reopening of comment period.

SUMMARY: We are revising an earlier proposed airworthiness directive (AD) for all RR RB211-Trent 553-61, 553A2-61, 556-61, 556A2-61, 556B-61, 556B2-61, 560-61, 560A2-61, 768-60, 772-60, 772B-60, 875-17, 877-17, 884-17, 884B-17, 892-17, 892B-17, and 895-17 turbofan engines. That NPRM proposed to supersede an existing AD that requires inspecting the intermediate-pressure (IP) compressor rotor shaft rear balance land for cracks, which could lead to engine failure. This action revises that NPRM by changing the optional terminating action for RB211-Trent 700 and RB211-Trent 800 engines to mandatory terminating action. Since these actions impose an additional burden over that proposed in the NPRM, we are reopening the comment period to allow the public the chance to comment on these proposed changes.

DATES: We must receive comments on this supplemental NPRM by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- Federal eRulemaking Portal: Go to <http://www.regulations.gov>. Follow the instructions for submitting comments.
- Fax: 202-493-2251.

- Mail: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590.

- Hand Delivery: U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE., Washington, DC 20590, between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

For service information identified in this AD, contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, England, DE248BJ; phone: 011-44-1332-242424; fax: 011-44-1332-245418 or e-mail from http://www.rolls-royce.com/contact/civil_team.jsp. You may review copies of the referenced service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803. For information on the availability of this material at the FAA, call 781-238-7125.

Examining the AD Docket

You may examine the AD docket on the Internet at <http://www.regulations.gov>; or in person at the Docket Management Facility between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this proposed AD, the regulatory evaluation, any comments received, and other information. The street address for the Docket Office (phone: 800-647-5527) is in the ADDRESSES section. Comments will be available in the AD docket shortly after receipt.

FOR FURTHER INFORMATION CONTACT: Alan Strom, Aerospace Engineer, Engine Certification Office, FAA, 12 New England Executive Park, Burlington, MA; phone: 781-238-7143; fax: 781-238-7199; e-mail: alan.strom@faa.gov.

SUPPLEMENTARY INFORMATION:

Comments Invited

We invite you to send any written relevant data, views, or arguments about this proposed AD. Send your comments to an address listed under the ADDRESSES section. Include “Docket No. FAA-2007-28059; Directorate Identifier 2007-NE-13-AD” at the beginning of your comments. We specifically invite comments on the overall regulatory, economic, environmental, and energy aspects of this proposed AD. We will consider all comments received by the closing date and may amend this proposed AD because of those comments.

We will post all comments we receive, without change, to <http://www.regulations.gov>, including any personal information you provide. We will also post a report summarizing each substantive verbal contact we receive about this proposed AD.

Discussion

We issued an NPRM to amend 14 CFR part 39 to include an AD that would apply to RR RB211-Trent 553-61, 553A2-61, 556-61, 556A2-61, 556B-61, 556B2-61, 560-61, 560A2-61, 768-60, 772-60, 772B-60, 875-17, 877-17, 884-17, 884B-17, 892-17, 892B-17, and 895-17 turbofan engines. That NPRM published in the Federal Register on October 18, 2011 (76 FR 64283). That NPRM proposed to require for certain RB211-Trent 700 and RB211-Trent 800 engines, on-wing initial and repetitive borescope inspections and when in the shop, repetitive eddy current inspections (ECIs) for cracks on the rear balance land; and continued for RB211-Trent 500 engines, initial and repetitive in-shop visual inspections or ECIs for cracks on the rear balance land. That NPRM also proposed certain optional terminating actions.

Actions Since Previous NPRM was Issued

Since we issued that NPRM, RR has ceased efforts to develop an on-wing ECI. Therefore the optional terminating action for RB211-Trent 700 and RB211-Trent 800 engines only, should be made mandatory. EASA has also superseded EASA AD 2010-0266R1, dated January 6, 2011, with EASA Airworthiness Directive 2011-0221, dated November 14, 2011 to accomplish the same corrective actions as proposed herein.

Comments

We gave the public the opportunity to comment on the previous NPRM. The following presents the comments received on the NPRM and the FAA's response to each comment.

Request

US Airways requested that we allow borescope inspection using RR Alert Service Bulletin (ASB) No. RB.211-72-AG270 when at shop visit, if the exposure of the IP compressor is not visible for ECI. The commenter stated that airlines will incur more maintenance costs if not allowed to do borescope inspections under this circumstance.

We do not agree. The visual/ECI is not required unless the rear face of the IP compressor is exposed. Our Definition paragraph defined a shop visit as the introduction of an engine into a shop, and disassembly sufficient to expose the IP compressor module rear face. We did not change the NPRM.

Request

The Boeing Airplane Company, Rolls-Royce plc, and American Airlines requested that we correct two service bulletin reference errors and two paragraph reference errors in the compliance section. We agree. We revised this NPRM by changing the Service Bulletin (SB) and paragraph reference errors, specifically changing "RR SB No. RB.211-72-G402, Revision 2, dated July 7, 2011" to "RR ASB No. RB.211-72-AG402, Revision 2, dated July 7, 2011", changing "RR SB No. RB.211-72-G401,

Revision 2, dated July 5, 2011” to “RR ASB No. RB.211-72-AG401, Revision 2, dated July 5, 2011”, changing the reference in paragraph (k)(2)(i) from “(h)” to “(g)(1)(i)”, and by changing paragraph “(f)(3)” to paragraph “(g)”.

Request

Rolls-Royce plc requested that, when referencing the RB211-Trent 800 service information, we make the inspection requirements consistent with the RB211-Trent 700 inspection requirements, as they are the same except for the compliance interval.

We agree. We changed paragraph (g)(1)(i) in this NPRM to state to use RR ASB No. RB.211-72-AG264, Revision 5, dated March 21, 2011, sections 3.A.(2)(b) through 3.A.(2)(c) and 3.A.(3)(a) through 3.A.(3)(c), or 3.B.(2)(a) through 3.B.(2)(c) and 3.B.(4)(a) through 3.B.(4)(c), to do the inspection.

Request

Rolls-Royce plc requested that we reference EASA AD 2011-0221, dated November 14, 2011, in the NPRM since it supersedes EASA AD 2010-0266R1, dated January 6, 2011.

We agree and changed the EASA AD reference.

Request

Rolls-Royce plc requested that we change the compliance time from “next shop visit”, to “next shop visit or within 90 months after the effective date of the AD” to be consistent with EASA’s AD.

We do not agree. The fretting caused by movement between the balance weights and the IPC rear face is related to engine run time, not calendar time. Shop visits are also related to average run time. We did not change the NPRM.

FAA’s Determination

We are proposing this supplemental NPRM because we evaluated all the relevant information and determined the unsafe condition described previously is likely to exist or

develop in other products of these same type designs. Certain changes described above expand the scope of the original NPRM. As a result, we have determined to reopen the comment period to provide additional opportunity for the public to comment on this supplemental NPRM.

Proposed Requirements of the Supplemental NPRM

This supplemental NPRM would require:

- For the RB211-Trent 700 and RB211-Trent 800 engines, on wing initial and repetitive borescope inspections and when in the shop, repetitive ECIs and visual inspections for cracks on the rear balance land; and
- For the RB211-Trent 500 engines, initial and repetitive in-shop visual inspections or ECIs for cracks on the rear balance land.
- For the RB211-Trent 700 and RB211-Trent 800 engines, adding a mandatory terminating action to the repetitive inspection requirements.

Costs of Compliance

We estimate that this proposed AD would affect about 136 engines installed on airplanes of U.S. registry. We also estimate that it would take about 3.5 work-hours per engine to perform the proposed on-wing/in-shop visual inspections, about 2.5 work-hours per engine to perform the proposed in-shop ECIs, and about 8 work-hours to rebalance the IP compressor. The average labor rate is \$85 per work-hour. Based on these figures, we estimate the total cost of the proposed AD to U.S. operators to be \$470,696.

Authority for this Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. "Subtitle VII: Aviation Programs" describes in more detail the scope of the Agency's authority.

We are issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: “General requirements.” Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

We determined that this proposed AD would not have federalism implications under Executive Order 13132. This proposed AD would not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify this proposed regulation:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Is not a “significant rule” under the DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979),
- (3) Will not affect intrastate aviation in Alaska, and
- (4) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

The Proposed Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA proposes to amend 14 CFR part 39 as follows:

PART 39 - AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by removing airworthiness directive (AD) 2008-18-08, Amendment 39-15665 (73 FR 52201, September 9, 2008), and adding the following new AD:

Rolls-Royce plc: Docket No. FAA-2007-28059; Directorate Identifier 2007-NE-13-AD.

(a) Comments Due Date

We must receive comments by [INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

(b) Affected ADs

This AD supersedes AD 2008-18-08, Amendment 39-15665, (73 FR 52201, September 9, 2008).

(c) Applicability

This AD applies to Rolls-Royce plc (RR) RB211-Trent 553-61, 553A2-61, 556-61, 556A2-61, 556B-61, 556B2-61, 560-61, 560A2-61, 768-60, 772-60, 772B-60, 875-17, 877-17, 884-17, 884B-17, 892-17, 892B-17, and 895-17 turbofan engines.

(d) Unsafe Condition

We are superseding AD 2008-18-08 because additional cracks on RB211-Trent 700 and RB211-Trent 800 intermediate-pressure (IP) compressor rotor shafts have been found since that AD was issued. This cracking could lead to IP compressor rotor shaft failure, uncontained engine failure, and damage to the airplane.

(e) Compliance

Comply with this AD within the compliance times specified, unless already done.

(f) RB211-Trent 700 Series Engines - Rear Balance Land Inspections

(1) On-wing inspections

(i) Within 625 cycles-in-service (CIS) after the effective date of this AD, borescope inspect the IP compressor rotor shaft rear balance land. Use RR Alert Service Bulletin (ASB) No. RB.211-72-AG270, Revision 4, dated March 21, 2011, sections 3.A.(2)(a) through 3.A.(2)(c) and 3.A.(3)(a) through 3.A.(3)(c), or 3.B.(2)(a) through 3.B.(2)(c) and 3.B.(4)(a) through 3.B.(4)(c), to do the inspection.

(ii) Thereafter, repeat the inspection within every 625 cycles-since-last inspection (CSLI). You may count CSLI from the last borescope inspection or the last eddy current inspection, whichever has occurred last.

(2) In-shop Inspections

At each shop visit, eddy current inspect (ECI) and visually inspect the IP compressor rotor shaft rear balance land, and visually inspect the balance weights. Use RR ASB No. RB.211-72-AG085, Revision 2, dated July 7, 2011, sections 3.A. through 3.D.(3)(b)(v), except paragraphs 3.D.(3)(a)(ii) and 3.D.(3)(b)(iii) to do the inspections.

(g) RB211-Trent 800 Series Engines - Rear Balance Land Inspections

(1) On-wing inspections

(i) Within 475 CIS after the effective date of this AD, borescope inspect the IP compressor rotor shaft rear balance land. Use RR ASB No. RB.211-72-AG264, Revision 5, dated March 21, 2011, sections 3.A.(2)(b) through 3.A.(2)(c) and 3.A.(3)(a) through 3.A.(3)(c), or 3.B.(2)(a) through 3.B.(2)(c) and 3.B.(4)(a) through 3.B.(4)(c), to do the inspection.

(ii) Thereafter, repeat the inspection within every 475 CSLI. You may count CSLI from the last borescope inspection or the last eddy current inspection, whichever has occurred last.

(2) In-shop Inspections

At each shop visit, ECI and visually inspect the IP compressor rotor rear shaft balance land, and visually inspect the balance weights. Use RR ASB No. RB.211-72-AG085, Revision 2, dated July 7, 2011, sections 3.A. through 3.D.(3)(b)(v), except paragraphs 3.D.(3)(a)(ii) and 3.D.(3)(b)(iii), to do the inspections.

(h) RB211-Trent 500 Series Engines – In-shop Rear Balance Land Inspections

At each shop visit, ECI the IP compressor rotor shaft and visually inspect the balance weights. Use RR ASB No. RB.211-72-AF260, Revision 5, dated July 7, 2011 sections 3.A. through 3.B.(3)(a)(iii) to do the visual inspection, or RR Service Bulletin (SB) No. RB.211-72-G448, Revision 3, dated July 7, 2011 section 3.D.(1) through 3.D.(14) to do the ECI.

(i) Definition

For the purposes of this AD, a shop visit is defined as introduction of an engine into a shop, and disassembly sufficient to expose the IP compressor module rear face.

(j) Mandatory Terminating Action for RB211-Trent 700 and RB211-Trent 800 Engines

(1) As mandatory terminating action to the in-shop repetitive inspections in paragraph (f)(2) of this AD, at the next shop visit in which any level of inspection or strip is scheduled to be carried out on the IPC, modify RB211-Trent 700 engines by removing the existing IPC balance weights, and then rebalancing the IPC as specified in paragraphs 3.B.(2) through 3.B.(6)(e) and 3.B.(6)(g) of RR ASB No. RB.211-72-AG402, Revision 2, dated July 7, 2011.

(2) As mandatory terminating action to the in-shop repetitive inspections in paragraph (g)(2) of this AD, at the next shop visit in which any level of inspection or strip is scheduled to be carried out on the IPC, modify RB211-Trent 800 engines by removing the existing IPC balance weights, and then rebalancing the IPC as specified in paragraphs

3.B.(2) through 3.B.(6)(e) and 3.B.(6)(g) of RR ASB No. RB.211-72-AG401, Revision 2, dated July 5, 2011.

(k) Previous Credit

(1) For RB211-Trent 700 series engines:

(i) An on-wing inspection done before the effective date of this AD using RR ASB No. RB.211-72-AG270, Revision 1, dated December 14, 2009, or Revision 2, dated December 21, 2010, or Revision 3, dated February 25, 2011, meets the inspection requirement in paragraph (f)(1) of this AD.

(ii) An in-shop inspection done before the effective date of this AD using RR ASB No. RB.211-72-AG085, Revision 1, dated September 27, 2010, meets the inspection requirement in paragraph (f)(2) of this AD.

(iii) An IPC rebalancing done before the effective date of this AD using RR SB No. RB.211-72-G402, Revision 1, dated January 11, 2011, meets the rebalancing requirement in paragraph (j)(1) of this AD.

(2) For RB211-Trent 800 series engines:

(i) An on-wing inspection done before the effective date of this AD using RR ASB No. RB.211-72-AG264, Revision 3, dated December 21, 2010, or Revision 4, dated February 25, 2011, meets the inspection requirement in paragraph (g)(1) of this AD.

(ii) An in-shop inspection done before the effective date of this AD using RR ASB No. RB.211-72-AG085, Revision 1, dated September 27, 2010, meets the inspection requirement in paragraph (g)(2) of this AD.

(iii) An IPC rebalancing done before the effective date of this AD using RR SB No. RB.211-72-G402, Revision 1, dated January 11, 2011, meets the rebalancing requirement in paragraph (j)(1) of this AD.

(3) For RB211-Trent 500 series engines:

(i) An in-shop visual inspection done before the effective date of this AD using RR ASB No. RB.211-72-AF260, Revision 4, dated July 28, 2009, meets the inspection requirement in paragraph (h) of this AD.

(ii) An in-shop ECI done before the effective date of this AD using RR ASB No. RB.211-72-G448, Revision 2, dated December 23, 2010, meets the ECI requirement in paragraph (h) of this AD.

(l) Alternative Methods of Compliance (AMOCs)

The Manager, Engine Certification Office, FAA, may approve AMOCs for this AD. Use the procedures in 14 CFR 39.19 to request an AMOC.

(m) Related Information

(1) For more information about this AD, contact Alan Strom, Aerospace Engineer, Engine Certification Office, FAA, 12 New England Executive Park, Burlington, MA; phone: 781-238-7143; fax: 781-238-7199; e-mail: alan.strom@faa.gov.

(2) European Aviation Safety Agency AD 2011-0221, dated November 14, 2011, also pertains to the subject of this AD.

(3) For service information identified in this AD, contact Rolls-Royce plc, Corporate Communications, P.O. Box 31, Derby, England, DE248BJ; phone: 011-44-1332-242424; fax: 011-44-1332-245418; or e-mail from http://www.rolls-royce.com/contact/civil_team.jsp. You may review copies of the referenced service information at the FAA, Engine & Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803. For information on the availability of this material at the FAA, call 781-238-7125.

Issued in Burlington, Massachusetts, on January 11, 2012.

Peter A. White,
Manager, Engine & Propeller Directorate,
Aircraft Certification Service.

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